

# Data Manipulation

## Logic Operations

---

# Logic Operators

## **ALU**

- ✓ Arithmetic
- ✓ Logic
- ✓ Shift

# Logic Operators

**Logic  
Operators**  
Bitwise  
operators  
✓ AND  
✓ OR  
✓ XOR

# Logic Operators

## **Why we use Logic Operators:**

### **AND**

- ✓ Placing zeros in one part of the bit patterns while not changing the others
- ✓ When we want to eliminate Red from RGB
- ✓ 16 bits showing the availability of Ice cream flavor
- ✓ This is called Masking

# Logic Operators

## **Why we use Logic Operators: AND**

- ✓ When we want to find out whether particular flavor of ice cream is available or not

# Logic Operators

## **Why we use Logic Operators: OR**

- ✓ Putting 1s at designated bits in the bit pattern without changing the remaining.
- ✓ mask 11011111 can be used with AND to make sure the third bit becomes zero
- ✓ mask 00100000 can be used with OR to make sure the third bit

# Logic Operators

## **Why we use Logic Operators: XOR**

- ✓ Forming the complement of the bit pattern by XORing with all 1's.
- ✓ Can invert an image.

# Summary

## **Logic**

## **Operators**

- ✓ Bitwise operators
- ✓ AND
- ✓ OR
- ✓ XOR
- ✓ Practical scenarios